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Having seen, then, that in the aggregate more civilized males than females die of pulmonary consumption; that the costal respiration of the civilized female is developed through the constricting influence of dress around the abdomen; that the lungs possess an excessive breathing surface which by sedentary occupations, etc., can be, and is frequently, reduced in a great degree; that the baneful results of such a reduction, consisting of hyperæmia, etc., fall with the greatest force on the apex of the lung; that all those who suffer from consumption also show a decided tendency to immobility of the upper part of the chest, — are we not, therefore, justified in believing that a defective costal respiration and the beginning of pulmonary consumption stand in relation to each other as cause and effect? And, going one step further, is it not clear that the civilized female owes her greater immunity from this disease in a great measure to the fact that she possesses a more highly developed costal expansion? If these relations exist, it is quite obvious that her manner of dress is a direct factor in bringing about this result. She has, by force of necessity, been led to clothe herself after a method which demands a restriction of the abdominal and diaphragmatic movements, and which cultivates a greater development of the costal portion of the breathing-organs, and thereby she unconsciously protects herself to a greater degree against this disease; while the male, on the other hand, dresses himself after a fashion which secures perfect freedom of motion to the diaphragm and to the abdominal muscles, but which also attracts and tends to confine the respiratory function to the lower portion of the chest. Moreover, it must not be forgotten that the same fashion also demands that his clothing should be suspended from the shoulders, which of itself restricts the movements of the upper portion of the chest; making it evident, therefore, that his clothing renders him, both indirectly and directly, more liable to the disease under consideration. To this conclusion, and to no other, do our facts and reasoning lead.

The evidence which has thus far been gathered from statistical, experimental, and inductive grounds, all tends to demonstrate that impairment of the respiratory movements of the upper portion of the lungs is one of the principal direct causes of pulmonary consumption. Indeed, all the proof goes to show that in many conditions of life, especially in many of those to which the male sex is exposed, the apices of the lungs become superfluous parts of the body, and on this account possess a strong tendency to that premature waste which is characteristic of all organs when they fall into a state of inactivity. The practical solution of the problem of the prevention of pulmonary consumption, as well as of the cure in many cases, therefore consists in the adoption of measures which tend to increase the chest capacity, and which maintain the general and local health of the individual.

The treatment, so far as prevention is concerned, resolves itself into a proper exercise of the chest muscles, into systematic breathing, and into the rational employment of compressed and rarefied air. First, then, as to a proper training of the chest muscles. This is accomplished by raising the shoulders, and by swinging the arms backward, forward, and upward, either with or without dumbbells, or by exercising on parallel bars, care being taken that a full inspiration is taken every time that the arms are thrown backward and upward, or the body forward, and that a complete expiration occurs when the arms are brought together in front, or when the body is thrown backward. These movements should be performed regularly, and from sixteen to twenty times in a minute. There are a number of appliances in the market which are worked by means of ropes, weights, and pulleys, and which are admirably adapted for the enhancement of the above-described movements. They are very simple, and can be attached to the wall of the nursery or of the sleeping-room, and not only afford a healthful exercise, but a pleasant amusement for both children and adults.

BOOK-REVIEWS.

Handbook of Republican Institutions in the United States of America. By DUGALD J. BANNATYNE. New York, Scribner & Welford. 16°.

THIS would have been a remarkable book even for an experienced public official to have written, and it is doubly so, coming

from a foreigner. It is the most systematic, the most complete, and the most accurate handbook of our institutions that has ever come to our notice. The author is a Scotch attorney, resident for twenty-two years past in Canada and the United States. In his preface he gives the reason for writing the book. "I have frequently heard it said," he writes, "that an immigrant into either of these countries, who brings some capital with him, is not likely to permanently succeed until he has lost all he brought with him and has started afresh." The author's personal experience corroborates this saying, and he attributes its truth to the fact that immigrants are ignorant of the country, the people, the customs, the government, to which they have come. To aid such in removing their ignorance, the book before us was written. But its existence can be and should be defended on far broader grounds. It is a mine of information for the American citizen himself, or at least it would be if it had an index. No table of contents, however full, can take the place of a good index.

The work consists of an introductory chapter and two parts. In the introduction the author gives a cursory view of our political life, its conditions, and its most recent workings. Rather too many statements rely upon the somewhat vivid and always vehement imaginations of the New York *World* for their foundation; but this is a minor matter, and may be overlooked. Mr. Ballantyne betrays his foreign extraction by criticising the equal representation of States in the United States Senate. The populations and areas which he cites as evidences of inequality of representation have absolutely no bearing upon the question whatever; for it is States as such, and not populations or areas, that are represented in the Senate. In these days, when so much ignorant criticism and unintelligent abuse are directed at public officials, it is pleasant to find that a disinterested and presumably non-partisan foreigner can write as follows: "The reader's attention should be attracted by the manner in which the whole population is, through Congress, kept thoroughly posted as to the several executive departments, and the whole United States and state, county, town, village, and city machinery. . . . The writer has on several occasions tested the merits of the federal, state, county, and other public officers, and has always had prompt response and courteous treatment. There is no unnecessary red-tapism or flummery, and every respectful application, whatever the form, receives attention" (p. 51).

Part first contains the great national documents, — the Constitution, Articles of Confederation, Declaration of Independence, and Washington's Farewell Address (which in some places the types make 'Farewell Letter'). Then follow careful, painstaking, and accurate descriptions of Congress, the Presidency, the Executive Departments, and their numerous bureaus and divisions. Every branch of the national administration is touched upon. The Territories are described, and the Enabling Act of Colorado given, to show by what process a Territory becomes a State.

Part second treats of State government and administration. That of New York is taken as a type. This is just as full and comprehensive as the preceding part, except in the case of cities. They are very scantily treated in two pages, whereas at least twenty-five would be necessary to make clear their organization and relation to the county and State governments. The subject of education and school organization is amply treated. We lay down the book with a feeling of profound satisfaction, and with full appreciation of its value as a book of reference.

The author's descriptions are impartial, and he rarely presents his own opinions or views. When he varies from this rule, his success is such that we are tempted to wish he did it oftener. Witness this comment: "There is need for a national bureau of immigration and naturalization, in which shall be kept a register recording the names and full particulars of every immigrant, and also a register of every immigrant naturalized under the laws of the United States, and which shall refer to the entries in the other register."

We commend the book unreservedly.

Organic Analysis. By ALBERT B. PRESCOTT. New York, Van-Nostrand. 8°.

THIS volume is in a measure an outgrowth of the useful little book put forth by the same author thirteen years ago under the title of

'Outlines of Proximate Organic Analysis,' and deals mainly with certain common organic compounds of importance in commerce or pharmacy. Many topics which are touched upon in the smaller book—such, for example, as the properties of the alcohols and alcoholic derivatives, and of the carbohydrates—are here passed by, excepting, perhaps, mere incidental mention; but such substances as are discussed at all, are in general treated fully and exactly, with liberal citation and reference to authorities. The alkaloids naturally hold an important place; and schemes for plant-analysis, the examination of coloring-materials, and the separation and identification of fats and oils, are prominent. The title of the book is suggestive of a view broader than that actually presented, but it should be said in this connection that information upon the more important topics omitted is easily accessible elsewhere. This book is a decidedly valuable contribution to the literature of analysis.

Elementary Chemistry. By M. M. PATTISON MUIR and CHARLES SLATER. Cambridge, Eng., University Pr. 12°. \$1.25.

Practical Chemistry. By M. M. PATTISON MUIR and DOUGLAS CARNEGIE. Cambridge, Eng., University Pr. 12°. 80 cents.

THESE two books are complementary, and together outline a progressive course in elementary chemistry.

The 'Practical Chemistry' leads experimentally from the demonstration of the distinction between simple physical and chemical changes up to such topics as the investigation of atomic weights, the phenomena of dissociation, the relative affinities of acids, the constitution of compounds, rates of etherification, and specific volumes; the acquisition of the elements of qualitative and quantitative analysis being assumed as an intermediate and outside incident of the course of work. The 'Elementary Chemistry' presents the essential facts and theories of chemistry, carefully distinguished and correlated in a clear and logical manner, the properties of bodies being discussed in the light of the 'periodic law.' The plan of instruction is in many respects unique and admirable, and reflects very strongly the growing tendency toward the early introduction of methods approximately quantitative.

Down the Islands. By WILLIAM AGNEW PATON. New York, Scribner. 8°. \$4.

THE author, who made a brief voyage to the Caribbees and British Guiana, tells the experiences and observations of his voyage. In an introductory note he confesses that on starting he had no knowledge whatever of the country he was going to visit. If this be true, he has made good use of his brief trip, for the book contains much valuable information; not the less valuable, as told in a very attractive form. In reading the description, it would seem as though the writer gives nothing but the impressions of an observant traveller who is unexpectedly taken to a world entirely new to him; and this makes his tale very charming. His remarks show that he is quick to catch the characteristic features of the country he visits; and his descriptions of the character of the several islands, of the English and French Creole, of the negroes, the 'black and yellow Caribs,' and of the Hindu coolie, are worth reading. Besides, a considerable amount of reliable statistical and historical information is embodied in this book, which gave us greater pleasure and satisfaction than many a pretentious book of travel.

Under the Southern Cross. By M. M. BALLOU. Boston, Ticknor. 12°. \$1.50.

THE author, who has spent much of his time in travelling all over the world, tells in the present volume the story of a journey to the Pacific Ocean. Starting from Boston, he crossed the continent, and began his sea-voyage in San Francisco. A few days were spent on the Hawaiian Islands, a few hours' stay was made at Samoa, and then he proceeded to New Zealand and Australia. The time has passed when scientific results of great import may be gleaned from such a journey; but the author tells in an attractive form his observations and experiences, and gives us a glance of the life of the colonists and natives of the Pacific Ocean so far as he has seen it.

Special attention is devoted to the political relations of the South Sea colonies to America and Europe. The author dwells upon the question of the proposed federation of the Australian colonies and the probability of their becoming an independent republic, upon

American influence in Hawaii and the development of American trade on the islands in consequence of the reciprocity treaty, and upon the late events in the Samoan Islands. Australian stock-raising and mining, and British immigration to these countries, are discussed, as well as the influence of the Chinese and of coolie labor, but the main and best part of the book are the interesting sketches of cities. Several descriptions of scenery are vivid and attractive, but those passages in which the author attempts to touch upon questions of geography or ethnology show that he has only paid a flying visit to the Pacific Ocean, and that he has not lived long enough in those regions to gain a thorough insight of their nature and of their natives.

NOTES AND NEWS.

THE *Railway Review* says that the Russians are pushing forward the Transcaspian Railroad as rapidly as possible. Seven thousand men are now grading the road through Bokhara. It is now ready for the rails for four-fifths of the way between the Oxus and Samarcand, nearly three hundred miles; but the track cannot be laid until the bridge over the Oxus is completed. This bridge, now more than half finished, will be three miles long. It will connect the road now completed to the Oxus with the extension to Samarcand, and next spring the line will probably be in operation.

—It is but a short time since we called attention to Edwards's 'Butterflies of North America,' and now a new part lies before us. Indeed, within a twelvemonth four parts of the new series have appeared, the intervals between them being briefer than has been the case with any preceding numbers in the twenty years it has been running. More species of the prolific genera *Colias* and *Argynnis* are figured, but the specially attractive plate of the number—and there is always one—is that devoted to *Cænonympha californica*, or *galactinus* as Mr. Edwards would prefer to have us call it. The transformations of this genus are now for the first time illustrated by the early stages of one of our American forms; and the number of exquisite figures 'given to these early stages would be deemed almost luxurious if we were not accustomed to this kind of generosity on Mr. Edwards's part. The species is abundant on the Pacific coast, but was first raised in West Virginia from eggs sent the author from California, and we now know its history better than any species of the genus is known in Europe. Two forms, distinguishable by slight differences in the intensity of the markings, have long been regarded as one and the same species; but it was reserved to Mr. Edwards to prove by his precise experiments that the two were seasonally dimorphic forms of one and the same species, the darker giving birth the same summer to the lighter. We wish that this work, so great a credit to American science and American art, were better supported, and not published at so heavy an expense to its indefatigable author. It is in fact superior, both in matter and in execution, to any thing which is done abroad, and ought to receive ample support at home. Yet we chance to know that nearly forty per cent of the regular subscribers to the work come from outside of the United States. This shows, indeed, its appreciation in other countries; but it is a kind of work which should be found in every considerable library of the country, as a stimulus and an aid to workers young and old, and to show what one man, remote from associates, libraries, and even from much of his own field of work, may accomplish therein.

—Gardiner G. Hubbard, C. E. Dutton, O. H. Tittman, J. H. Gore, C. H. Merriam, J. R. Bartlett, R. Birnie, jun., J. W. Powell, Henry Gannett, A. H. Thompson, A. W. Greeley, Henry Mitchell, George Kennan, Marcus Baker, and Gilbert Thompson, all of Washington, have incorporated the National Geographical Society for a term of one hundred years. Its principal objects are to increase and diffuse geographical knowledge, to publish the transactions of the society, to publish a periodical magazine and other works relating to the science of geography, to dispose of such publications by sale or otherwise, and to acquire a library under the restrictions and regulations to be established by its by-laws. The officers elected for the current year are as follows: president, Gardiner G. Hubbard; vice-presidents, H. G. Ogden (United States Coast and Geodetic Survey), Com. J. R. Bartlett (Hydrographic